

**DIRECT TESTIMONY
OF
KYLE M. YOUNG**

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DIRECT TESTIMONY OF

KYLE M. YOUNG

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2017-370-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.

A. My name is Kyle M. Young and my business address is P.O. Box 88, Jenkinsville, South Carolina 29065. I am the Manager, Nuclear Plant Demobilization for South Carolina Electric & Gas Company ("SCE&G" or the "Company").

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I have a Civil Engineering degree from Tennessee Technological University. After graduation, I started my career as an Engineer with the United States Army Corp of Engineers. From 2003 to 2008, I was employed with several engineering and construction firms, beginning as an engineer and then working in project management. I began working for SCE&G in 2008 as a Projects Specialist. Thereafter, I was promoted to a Supervisor, Nuclear Construction in 2010. In 2015, I was promoted to the position of Manager, Nuclear Plant Construction. In 2018, my title was changed to Manager, Nuclear Plant Demobilization.

1 **Q. WHAT ARE YOUR DUTIES WITH SCE&G?**

2 A. Currently, as Manager, Nuclear Plant Demobilization, I have
3 responsibility for the activities associated with the abandonment of the New
4 Nuclear Deployment Project (the “Project” or the “NND Project”). As
5 Manager, Nuclear Plant Construction, I had daily oversight of project
6 management of the NND Project in which Westinghouse Electric Company,
7 LLC (“Westinghouse” or “WEC”) and Chicago Bridge & Iron (“CB&I”)
8 (collectively “WEC/CB&I” or the “Consortium”) were constructing two
9 Westinghouse AP1000 nuclear generating Units in Jenkinsville, South
10 Carolina, (the “Units”). The Units were jointly owned by SCE&G and South
11 Carolina Public Service Authority (“Santee Cooper”). I was also the lead of
12 SCE&G’s Project Management Organization, which was responsible for
13 oversight of project management, issue management, and portions of the
14 project controls activities for construction of the Units.

15 **Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION?**

16 A. No. This will be the first time I testify before the Public Service
17 Commission of South Carolina (the “Commission”).

18 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

19 A. The purpose of my testimony is to discuss the status and activities
20 associated with construction during the time immediately preceding the
21 decision to abandon the Project, the abandonment activities that followed,
22 and the current status of the site. Also, I will describe the oversight of the

1 Project by the representatives of the public based on my experience with this
2 Project.

3 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

4 A. My testimony is organized into the following sections:

5 I. Regulatory Oversight of the Project

6 II. The Project's Status Immediately Preceding Westinghouse's
7 Bankruptcy

8 III. The Westinghouse Bankruptcy

9 IV. Abandonment Activities

10 V. Assets Being Placed in Service

11 VI. Conclusion.

12 **Q. WHAT IS THE BASIS FOR YOUR TESTIMONY CONCERNING**
13 **THE PROJECT TODAY?**

14 A. In describing the recent history of the Project, I rely on my direct
15 personal knowledge of the Project and the activities undertaken by my team.
16 I also cite to quarterly reports and sworn testimony previously given by
17 others before the Commission.

18 **I. REGULATORY OVERSIGHT OF THE PROJECT**

19 **Q. WHO WERE THE KEY REGULATORS AND WHAT WERE THEIR**
20 **PRIMARY ROLES IN REGULATING THE PROJECT?**

21 A. When describing the Project, I typically reference four broad
22 categories: Safety, Quality, Schedule and Cost. As concerns Safety, the key

1 regulators were the Nuclear Regulatory Commission (NRC) and the
2 Occupational Safety and Health Administration (OSHA), which is
3 administered in South Carolina by the Department of Labor, Licensing, and
4 Regulation (LLR). The LLR regulated industrial safety of work on site by
5 performing periodic inspections of the Project. Also, SCE&G, the
6 Consortium and its subcontractors filed required reports to OSHA/LLR
7 documenting hours worked and notifying the LLR of any injuries requiring
8 a recorded report.

9 The NRC closely monitored the Project's construction and
10 operational preparations to ensure adequate protection of public health and
11 safety, to promote the physical and digital security of the Units, and to protect
12 the environment. NRC engineers and other experts reviewed the submission
13 of the Combined Operating and Construction Licenses ("COLs") and
14 scrutinized any subsequent changes to the COLs, which were categorized as
15 License Amendment Requests ("LARs"), requiring NRC pre-approval
16 before proceeding with construction, or with any departures from existing
17 licensing specifications. These matters were all subject to periodic NRC
18 inspection.

19 The NRC had a broad scope of review concerning the Project,
20 covering anything potentially "safety-related" or that ultimately was
21 "important to safety" in constructing and operating the two Units. NRC
22 personnel inspected the SCE&G programs, processes and procedures for

1 technical soundness and administrative accuracy, ensured SCE&G and the
2 Consortium were employing workers who were fit-for-duty, inspected
3 vendors supplying the Project with equipment, materials and services,
4 reviewed engineering drawings and specifications, and witnessed fabrication
5 and construction activities. To do this they utilized individual and teams of
6 inspectors and subject matter experts to review changes to the COL. The
7 NRC also deployed project managers and schedulers to monitor the progress
8 of the Project and retained and employed multiple on-site Resident
9 Inspectors to perform daily inspections, the findings of which they published
10 quarterly in their Inspection Reports. The number of NRC inspectors on Site
11 were typically five to six but at any time could be as many as 12 to 15. The
12 NRC was also a key regulator for the second category, Quality, because
13 safety and quality are intertwined.

14 Additionally, DHEC regulated many environmental aspects of the
15 Project, including the quality of the storm water runoff through construction
16 and industrial storm water permits; the quality of the air through operating
17 permits for the on-site concrete batch plant; the protection of water quality
18 through NPDES discharge and Clean Water Act Section 401 permits; and the
19 regulatory compliance of the Project's potable water facilities and
20 wastewater treatment and disposal facilities. DHEC reviewed and approved
21 all the permits listed above and performed periodic inspections on site as
22 well.

1 The FERC regulated water withdrawals and construction activities
2 involving existing FERC hydro power projects, specifically the Monticello
3 and Parr Reservoirs. The U.S. Army Corps of Engineers (“USACE”)
4 regulated the waters of the U.S. through a Section 404 permit for wetlands
5 and streams on Project land and mitigated their use by improving quality in
6 other locations within the state.

7 For the third and fourth categories, Schedule and Cost, the key
8 regulator was the Office of Regulatory Staff (ORS) and the Commission.
9 ORS was the agency with principal on-going oversight responsibility for
10 Schedule and Cost.

11 This Project was closely regulated by multiple state and federal
12 regulatory agencies. It was subject to a very high degree of ongoing
13 regulatory scrutiny from these agencies and their inspectors.

14 **Q. WHAT WERE YOUR INTERACTIONS WITH THESE KEY**
15 **REGULATORS?**

16 A. The NND group employed a Licensing department to ensure the plant
17 was constructed and operated in compliance with NRC, State, and Federal
18 licenses, regulations, requirements, permits, and commitments. As a member
19 of the Construction department, I supported the Licensing department to
20 ensure compliance with all required permits and completion of all necessary
21 inspections. Concerning OSHA/LLR, I participated in the debriefing from
22 their initial site inspection and ensured appropriate SCE&G personnel were

1 assigned to support their subsequent inspections. As to interaction with
2 SCDHEC, I met with SCDHEC staff in their office multiple times during the
3 storm water permitting process and was part of a team supporting SCDHEC's
4 periodic inspections. As to the FERC, I performed field walk-downs with the
5 Licensing department and the SCE&G Fossil/Hydro business unit as a part
6 of our internal process of ensuring compliance with existing FERC project
7 permits and in regulatory requirements and in support of permit applications
8 submitted by our Licensing department. Concerning the USACE, I supported
9 permit applications with our Licensing Department, and I interacted with the
10 Charleston District personnel as part of the Clean Water Act Section 404
11 permit application process during a site walk-down of the limited on-site
12 wetlands and stream that were disturbed as part of construction.

13 Concerning the NRC, I interacted with multiple levels of personnel
14 from multiple areas within the NRC throughout the course of the Project. I
15 answered questions on a near-daily basis from on-site Resident Inspectors,
16 presented information and answered questions from Inspectors during team
17 inspections, attended entrance and exit meetings from multiple inspections,
18 and publically presented SCE&G's requests related to several particularly
19 urgent LAR submittals that were needed to resolve or prevent delays in the
20 construction progress. I performed multiple site walk downs with NRC
21 senior staff and NRC Commissioners.

1 Concerning ORS, I performed multiple site walk downs with the ORS
2 staff members and their consultant who conducted site walk downs on a
3 regular basis. I met with ORS staff during regular monthly visits, and
4 presented information to ORS leadership during monthly meetings with the
5 leadership of the NND construction team. I also participated in several
6 meetings related to special topics of interest or concern to the ORS, which
7 were convened at ORS's request.

8 **Q. WHAT ROLE DO YOU UNDERSTAND ORS TO HAVE PLAYED IN**
9 **PROVIDING PUBLIC OVERSIGHT FOR THE PROJECT DURING**
10 **THE PERIOD YOU WERE INVOLVED IN IT?**

11 A. As I understand it, ORS served as the representative of the public in
12 monitoring the construction of the Units and provided direct regulatory
13 oversight of the Project. ORS personnel were routinely present on site. My
14 understanding is that ORS has regularly reported its findings, concerns and
15 conclusions regarding the Project to the Commission and the public. As
16 previously described, the ORS was primarily focused on the schedule and
17 cost aspects of the Project during my interactions. They also took an interest
18 in the safety and quality aspects of the Project, and reviewed and analyzed
19 the reports of inspections and other actions that the NRC undertook in
20 oversight of the Project.

21 **Q. HOW HAS ORS DESCRIBED ITS OVERSIGHT ACTIVITIES**
22 **RELATED TO THE PROJECT?**

1 A. In the 2015 Update Proceeding, Docket No. 2015-103-E, the head of
2 ORS's New Nuclear Development Office, Mr. Anthony James, summarized
3 ORS's oversight activities as follows:

4 ORS visits the construction site in Jenkinsville at least twice
5 per week to perform on-site reviews of numerous documents that
6 relate to the approved construction schedule. These documents
7 include, but are not limited to: the weekly construction activities
8 report, detailed construction schedules, milestone comparison activity
9 reports, milestone schedule recovery plans, major component
10 fabrication status log and meeting minutes. ORS also attends on-site
11 Plan of the Day meetings with "front-line" Project Managers to learn
12 about immediate construction activities and challenges. On a monthly
13 basis, ORS and its consultant meet with SCE&G's on-site lead project
14 representatives to discuss the overall status of the Units and perform
15 an in-depth site tour to observe construction progress.

16
17 (2015 Update Proceeding, Tr. at 707).

18 **Q. IS THIS DESCRIPTION OF ORS OVERSIGHT ACTIVITIES**
19 **GENERALLY CONSISTENT WITH WHAT YOU OBSERVED AS**
20 **SUPERVISOR, NUCLEAR CONSTRUCTION SINCE 2010?**

21 A. Yes. This description is generally consistent with what I observed. I
22 was at various times involved in briefing ORS personnel and outside experts;
23 leading, co-leading or arranging site tours for ORS personnel; and attending
24 monthly meetings scheduled for the purpose of giving ORS personnel and
25 outside experts access to information about the project and the opportunity
26 to directly question SCE&G construction personnel. I was involved in
27 answering questions from ORS oversight personnel and experts both in and
28 outside of those meetings, and providing documentation to ORS personnel

1 as requested. The description of ORS's activities as Mr. James described in
2 his testimony in 2015 is generally consistent with what I saw.

3 **Q. DID YOU MEET WITH ORS AS ONE OF THE "ON-SITE LEAD**
4 **PROJECT REPRESENTATIVES" AS MR. JAMES DESCRIBED?**

5 A. Yes, for about the first five years of the Project, ORS would visit the
6 site with various ORS staff members and their consultant(s) and ask
7 questions to the on-site SCE&G leadership. The ORS would then convene
8 more formal meetings with key NND department manager level personnel
9 and other relevant SCE&G personnel, such as Transmission management,
10 every month at ORS's offices in downtown Columbia. After approximately
11 five years, the ORS decided to move these more formal meetings to the
12 Jenkinsville site and to supplement them with quarterly meetings between
13 ORS's senior leadership and senior leaders from SCE&G, supplemented
14 with periodic updates and meetings with SCANA executives and Consortium
15 project directors. These quarterly meetings were held in ORS's offices in
16 Columbia. At ORS's request, ORS began meeting monthly with the
17 Consortium project director on site and conducting a monthly on-site
18 meeting with SCANA senior executives.

19 I often supported the ORS site walk downs, and if I was unavailable
20 for any given monthly walk down, I sent my designee. My General Manager,
21 Alan Torres, was a regular attendee for the on-site and Columbia meetings

1 between site leadership and the ORS. I would attend these meetings as his
2 designated alternate if he was unavailable.

3 **Q. WHAT HAPPENED AT THESE MONTHLY MEETINGS?**

4 A. At these monthly meetings, NND department managers and other lead
5 personnel from the site briefed ORS and its experts on the current progress
6 and status of the Project. A broad range of topics were discussed. It should
7 be kept in mind that ORS was routinely reviewing the same monthly and
8 weekly construction reports that the Consortium provided to SCE&G. ORS
9 identified the questions and agenda items that established the scope of these
10 meetings based on those reports. The topics discussed in these meetings
11 included the progress by WEC/CB&I in the design, licensing, and
12 construction of the Project and in the procurement and fabrication of
13 equipment, material, modules and submodules. SCE&G also updated ORS
14 about SCE&G's progress in recruiting, training and licensing the staff needed
15 to operate and maintain the Units and concerning SCE&G's program to
16 ensure operational readiness, which means SCE&G's ability to conduct
17 acceptance testing for the Units and its systems once completed and to
18 operate the Units when placed into commercial service.

19 At those meetings, SCE&G also briefed ORS on upcoming
20 construction and equipment fabrication milestones, any issues or problems
21 related to those milestones, issues or problems with construction generally
22 or issues or problems related to equipment or module fabrication. In those

1 meetings, SCE&G personnel identified and discussed SCE&G's list of focus
2 areas for the Project, which are the areas where challenges had been
3 encountered that were serious enough to pose an important risk to the overall
4 success of the Project. Focus areas received management and Project team
5 oversight attention and resources at the highest level.

6 SCE&G typically brought its NND department managers or their
7 designated alternates to its monthly meetings with ORS so that ORS could
8 hear directly from the personnel most directly involved with each aspect of
9 the Project and ask whatever questions ORS had. At these meetings, ORS
10 set the agenda by coordinating with SCE&G Business and Finance staff
11 ahead of the meetings and generating a list of prepared questions and agenda
12 topics. At these meetings, ORS representatives requested any documentation
13 that they wanted to review in addition to the monthly, quarterly and other
14 reports and minutes of site reporting meetings that were routinely provided
15 to ORS. I and other SCE&G personnel responded to particular requests of
16 the ORS for information, and my team supplied information as requested.
17 ORS was operating under a non-disclosure agreement which allowed them
18 to access the WEC/CB&I confidential or business proprietary data that we
19 received from the Consortium.

20 In these meetings, ORS personnel often referenced the reports and
21 other documentation that SCE&G provided to ORS electronically by means
22 of the electronic document room which was set up for ORS's use. The

1 reports ORS referenced in these meetings included the monthly and weekly
2 reports on the Project that the Consortium provided SCE&G, and the weekly
3 and quarterly reports that SCE&G provided to its senior leadership team.

4 **Q. WHAT IS YOUR UNDERSTANDING CONCERNING THE PLAN OF**
5 **THE DAY MEETINGS THAT ORS REFERENCED IN ITS 2015**
6 **UPDATE PROCEEDING TESTIMONY?**

7 A. ORS began sending personnel out to the site once a week to attend a
8 plan-of-the-day meeting. These were meetings which WEC/CB&I held at the
9 start of each workday to discuss the plan for that day's work, weekly
10 objectives, and near-term milestones. One of the important purposes of these
11 meetings was to elevate problems to management from across the site and to
12 discuss barriers or concerns about the work going forward. At these
13 meetings, each lead or manager from the primary areas of the Project as well
14 as functional managers for safety, quality, licensing, engineering,
15 procurement and startup, would report out plans, objectives, milestones,
16 problems and barriers. These plan-of-the-day meetings were a cornerstone
17 of the day-to-day management of the Project. The Consortium directors
18 attended these meetings so that they could hear and aid in resolving emergent
19 issues. SCE&G construction personnel were present to provide amplifying
20 information from SCE&G's oversight functions, question the means and
21 methods of the contractor, and advise the Consortium leadership. This was
22 required to be done in a manner that did not direct the Consortium's work as

1 the choice of means and methods was reserved to the Consortium under the
2 EPC Contract. As ORS testified in 2015, by attending these meetings, ORS's
3 construction experts and other personnel were able "to learn about immediate
4 construction activities and challenges," from "front-line Project Managers."
5 (2015 Update Proceeding, Tr. at 707). By attending these meetings, ORS was
6 in a position to hear about specific construction issues at the same time and
7 in the same way that SCE&G's project oversight personnel did.

8 **Q. DID ORS ATTEND ANY OTHER FRONT-LINE MEETINGS?**

9 A. Yes, I am aware that ORS representatives monitored and participated
10 in NRC public meetings related to LARs. ORS also attended many of the
11 pre-job briefings that were conducted by the Consortium before undertaking
12 major milestones, such as, for example, the lift and set of major structural
13 modules or major items of equipment like a reactor vessel. I am also aware
14 that ORS regularly read the NRC inspection reports and other documents
15 because I was questioned about them by ORS.

16 **Q. DID OTHER REGULATORS ATTEND THE PLAN-OF-THE-DAY**
17 **MEETING?**

18 A. Yes, the NRC Resident Inspectors, in addition to ORS representatives,
19 regularly attended the Plan-of-the-Day meetings.

20 **Q. WERE YOU AWARE OF ORS VISITING OFF-SITE**
21 **FABRICATIONS FACILITIES FOR THE PROJECT?**

1 A. Yes, more than once I heard ORS personnel discuss visits to off-site
2 fabrication locations, such as the CB&I Lake Charles facility in Louisiana
3 (formerly the Shaw Modular Solutions (SMS) facility) and the Newport
4 News Industries facility in Virginia. As Mr. James testified, “ORS travel[ed]
5 to fabrication facilities in South Carolina, Virginia, Louisiana and Florida to
6 monitor the fabrication of major structural modules, shield building panels,
7 mechanical modules, and components.” (2015 Update Proceeding, Tr. at
8 710). Although I did not participate in those trips, this statement is consistent
9 with the references to those trips that ORS personnel made in the meetings I
10 attended.

11 **II. THE PROJECT’S STATUS IMMEDIATELY PRECEDING**
12 **WESTINGHOUSE’S BANKRUPTCY**

13 **Q. WOULD YOU CONSIDER THIS PROJECT TO HAVE BEEN A**
14 **FIRST-OF-A-KIND IN ITS EARLY STAGES?**

15 A. Yes. This Project and the project to build sister units at Plant Vogtle
16 in Waynesboro, Georgia (the “Vogtle Project”) were first-of-a-kind projects.
17 They were the first AP1000 Advanced Passive Safety units to be licensed in
18 the United States and among the first in the world. They were the first new
19 nuclear construction projects to be launched in the United States in nearly
20 four decades. They were the first new nuclear construction projects
21 undertaken under the NRC licensing and oversight structure contained in 10
22 C.F.R. Chapter 52, which imposed a very different licensing structure than

1 the structure under which the earlier generations of units were built. These
2 were the first new nuclear construction projects in the United States to
3 significantly rely on modular construction techniques.

4 **Q. IN MID-2016, WHERE DID THE PROJECT STAND IN LIGHT OF**
5 **THESE SORTS OF FIRST-OF-A-KIND CHALLENGES?**

6 A. By 2016, most of the unique or first-of-a-kind challenges — apart
7 from startup testing — had been encountered and overcome or largely
8 mitigated.

9 **Q. CAN YOU OUTLINE THE CHALLENGES THAT WERE**
10 **OVERCOME OR LARGELY MITIGATED BY 2016?**

11 A. Yes. Among the principal challenges encountered by the Project in its
12 early years, the following six had largely been mitigated or overcome by
13 2016:

- 14 1. Of the 19 major permits, certifications or categories of permits
15 required for the Project, all but one had been issued. The one which
16 was not issued was determined not to be needed.
- 17 2. The majority of the equipment required to construct an AP1000
18 unit had been successfully fabricated and tested. Of the 13 items
19 of major equipment required to construct Unit 2, ten had been
20 successfully fabricated, tested and received on-site. This
21 equipment was being stored and maintained, awaiting installation.
22 Of the three items of major equipment that were not on site, two

1 (the Reactor Coolant Pumps) had been recently modified and were
2 in the final stages of the testing to validate those modifications.
3 One (a heat exchanger) was being up-fitted with improvements to
4 extend its operating life.

5 3. Design finalization, which was a major problem earlier in the
6 Project, was nearing its conclusion. The design of the most
7 complex systems and structures, those related to the Nuclear
8 Island, was close to complete. Westinghouse had begun to more
9 fully implement mitigation strategies, like moving design
10 engineers to site to respond to problems by evaluating them and
11 implementing design changes as they arose.

12 4. The new and untested NRC licensing structure under 10 C.F.R.
13 Part 52 had been implemented. These regulations had been
14 adopted by the NRC under the Energy Policy Act of 1995 and were
15 being implemented for the first time in the context of new nuclear
16 construction. SCE&G and Southern Nuclear Company had
17 employed a number of mitigation strategies with the NRC, such as
18 closing some Inspections, Tests, Analyses, and Acceptance
19 Criteria (ITAAC) and requesting early confirmation of the NRC's
20 review and acceptance; placing all licensing changes in the
21 schedule and prioritizing them for the NRC; implementing a
22 Preliminary Approval Request (PAR) process that allowed for

1 construction to proceed while a LAR change was being reviewed
2 by the NRC; and holding frequent regular meetings with senior
3 NRC staff and Commissioners to align the NRC with project
4 priorities.

5 5. A construction workforce able to meet strict nuclear-safety and
6 fitness-for-duty standards had been recruited and deployed on site.
7 While recruiting and training these personnel had many
8 challenges, the Consortium employed a number of mitigation
9 strategies throughout the course of the Project to ensure enough
10 craft of key disciplines were available to work.

11 6. SCE&G recognized from the beginning that there was a risk that
12 a disaster anywhere in the global nuclear power industry could
13 derail the Project. Such a disaster occurred at the Daiichi
14 Fukushima nuclear generating facility on March 11, 2011. It
15 caused some delay in the issuance of the NRC license for the Units
16 but otherwise did not set the Project back materially. The seismic
17 resiliency of the AP1000 design had been confirmed and
18 additional emergency response resources were added to the V.C.
19 Summer Station plan to ensure that the three V.C. Summer Units
20 could respond to a multi-unit event and a region-wide natural
21 disaster such as the one that occurred when the 2011 tsunami
22 struck coastal areas in Japan. Additionally, the passive design of

1 the AP1000 plant meant that not as many of the emergency
2 response resources were required compared to the existing fleet of
3 U.S. nuclear plants.

4 **Q. WHAT THEN WERE THE MOST IMPORTANT REMAINING RISK**
5 **FACTORS FOR CONSTRUCTION?**

6 A. From a construction standpoint, in the years leading up to 2016, the
7 most important remaining risk factors for the Project that we identified were:

- 8 1. Effectively enforcing the terms of the EPC Contract without
9 causing commercial issues with the Consortium that could inhibit
10 Project progress necessary to successfully complete the Project.
- 11 2. Overcoming the scheduling and productivity challenges related to
12 the fabrication of modules and submodules and procurement of
13 major commodities which were increasing costs and delaying the
14 construction schedule.
- 15 3. Improving the unsatisfactory productivity factors for on-site
16 construction labor which were increasing costs and delaying the
17 construction schedule.
- 18 4. Risks associated with startup and testing of the Units. However,
19 due to the abandonment of the Units, startup and testing challenges
20 never advanced beyond prospective challenges that the Project
21 never had the opportunity to fully encounter. These risks,
22 however, were being planned for and mitigated by SCE&G's

1 involvements with ongoing startups at the Chinese AP1000
2 construction through embedding Consortium and SCE&G
3 personnel in the Chinese start-up activities. Additionally, SCE&G
4 monitored the recent startup of Watts Bar Unit 2, which was in a
5 U.S. regulatory environment, by communicating with TVA
6 project leadership, reviewing results from Institute of Nuclear
7 Power Operations (INPO) evaluations, and embedding personnel
8 in the startup organization.

9 **Q. HOW LONG HAD MODULE AND SUBMODULE PRODUCTION**
10 **BEEN A FOCUS AREA FOR THE PROJECT?**

11 A. Module and submodule production issues had been a focus area that
12 SCE&G had identified and addressed continuously since 2010. As the
13 Commission noted in Order No. 2015-661, “public records show that
14 SCE&G discussed the seriousness of its concerns about submodule
15 production . . . in each of the 21 quarterly reports filed since March 2010.”
16 (Order No. 2015-661 at 18.) The top Project issue between 2010 and 2015
17 was module and submodule production, fabrication, and assembly.

18 **Q. WHAT ACTIONS HAD SCE&G TAKEN TO ADDRESS THAT**
19 **ISSUE?**

1 A. The efforts by SCE&G, Santee Cooper, and Southern Nuclear
2 Company to resolve issues associated with module and submodule
3 fabrication included:

- 4 1. Repeatedly challenging the leadership of the Consortium to take
5 the steps required to correct problems at the submodule fabrication
6 facility in Lake Charles, Louisiana;
- 7 2. Posting a permanent NND oversight resource at Lake Charles;
- 8 3. Convincing Westinghouse to post additional design engineers at
9 Lake Charles to facilitate design changes required for submodule
10 constructability;
- 11 4. Allowing CB&I to relocate important aspects of submodule
12 fabrication to the Jenkinsville site, and to hire additional South
13 Carolina-based crews to speed up the work;
- 14 5. Convincing CB&I to diversify its submodule supply chain by
15 outsourcing submodule fabrication to alternative fabricators in the
16 United States, Canada and Japan. SCE&G then posted additional
17 oversight personnel in many of these locations and performed
18 routine oversight visits to these facilities; and
- 19 6. Disputing any invoiced costs that were associated with delay in
20 module production.

1 **Q. HOW DID MODULE PRODUCTION CHALLENGES CHANGE**
2 **THROUGHOUT THE COURSE OF THE PROJECT?**

3 A. By 2015, module fabrication issues were not fully resolved but were
4 being overcome. Of the six major structural modules required for Unit 2,
5 three had been completed and set in place by the summer of 2015. A fourth
6 was on site and structurally complete. All submodules required to complete
7 the fifth module were on-site and being assembled. The submodules for the
8 sixth module were being received. (Docket No. 2015-103-E, Tr. at 256.)
9 Unit 3 submodules were beginning to be produced and shipped by the
10 alternate vendors other than CB&I Lakes Charles.

11 By 2016, issues related to the fabrication of structural modules had
12 ceased to be a critical path item for the Project. By 2016, all major structural
13 modules for Unit 2 were in place and all submodules required to fabricate the
14 Unit 3 major structural modules had been received on-site. SCE&G also
15 pushed Westinghouse to further diversify its supply chain for key
16 commodities such as rebar, embedment plates, and piping; Westinghouse
17 responded by adding more vendors and facilities to the supply chain.

18 By 2017, SCE&G still continued to monitor the production at key
19 module and commodity facilities to aid in mitigating the risk of the supply
20 chain.

21 **Q. WITH REFERENCE TO THE RISK FACTOR CONCERNING ON-**
22 **SITE CONSTRUCTION PRODUCTIVITY, WHAT WAS THE**

1 **STATUS OF THAT ISSUE IN 2015 BEFORE THE EPC CONTRACT**
2 **WAS AMENDED?**

3 A. Of all the risk factors in 2015, on-site construction productivity
4 proved to be the most difficult risk factor to overcome and continued to be
5 an important risk factor up until the Project was suspended by Santee Cooper
6 and abandoned by SCE&G. However, in 2015, SCE&G and Santee Cooper
7 were able to substantially mitigate the cost implication of this risk factor by
8 shifting the costs associated with labor productivity to Westinghouse through
9 a major amendment to the EPC Contract.

10 **Q. HOW WAS THIS ACCOMPLISHED?**

11 A. In the October 2015 Amendment to the EPC Contract (the “2015
12 Amendment”), SCE&G and Santee Cooper negotiated a fixed price option
13 (the “Fixed-Price Option”) for completing all but a limited number of scopes
14 of work under the EPC Contract. This meant that Westinghouse would be
15 responsible for any increased costs if labor productivity did not improve and
16 would be motivated by cost savings if productivity did improve. This change
17 in the EPC Contract terms was coupled with large positive incentives and
18 significant negative penalties and damages for Westinghouse to ensure that
19 the Project was completed on time. Negotiating these changes to the EPC
20 Contract in 2015 was an important part of how SCE&G responded to the
21 labor productivity issue.

1 **Q. BEFORE WE GO FURTHER, PLEASE EXPLAIN HOW**
2 **CONSTRUCTION PRODUCTIVITY IS MEASURED.**

3 A. Construction productivity is measured through productivity factors,
4 or “PFs.” PFs measure the standard amount of labor forecasted to be
5 necessary to accomplish a particular scope of work compared to the amount
6 of labor actually required to do so. A PF of 1.0 means that the scope of work
7 has taken exactly the number of labor hours that were forecasted for it. As
8 WEC/CB&I measured productivity, a PF of 2.0 meant that the scope of work
9 had taken twice as many labor hours as were forecasted. A PF of 0.5 meant
10 that the scope of work has taken half as many hours as were forecasted.

11 **Q. IN YOUR EXPERIENCE WHAT FACTORS SIGNIFICANTLY**
12 **CONTRIBUTE TO THE PF CALCULATION?**

13 A. Since a PF is actual hours versus forecasted hours, each of these items
14 can significantly affect the PF. The forecasted hours come from cost and
15 schedule estimates, and depend on the accuracy of the Unit Rates the
16 contractor is using. Unit Rates are a ratio that compare two quantities, in this
17 case the amount of work hours it should take to install a given amount of a
18 commodity. They depend on many factors, such as craft availability, craft
19 skill level, work area congestion, work shift schedule, site conditions and
20 logistics, work heights, and weather. They are expressed in terms of the
21 standard units of the commodities to be installed in completing a scope of
22 work such as cubic yards of reinforced concrete or earthmoving, tons of steel,

1 or linear feet of piping, electrical cable, cable trays, or conduit. By estimating
2 the appropriate unit rates and accurate quantities of commodities required to
3 complete a job, contractors can properly estimate the labor costs and time
4 involved in completing a scope of work. After a scope of work is completed,
5 contractors can use the same method to calculate the productivity factors
6 actually achieved.

7 In practice, many factors affect the actual hours spent. These include
8 accuracy of the timekeeping system, workforce skill, material availability,
9 quality of leadership, time to respond and resolve issues, and whether tasks
10 are repetitive or first-of-a-kind.

11 **Q. WHAT LABOR FACTORS HAD WEC/CB&I ACHIEVED AT THIS**
12 **PROJECT?**

13 A. The Project's productivity factors varied depending on the type of
14 commodity, the area of the site or building, and the unit in which the work
15 was being performed. For example, the civil site work PF was close to 1.0
16 during the course of the Project. For work in the nuclear islands and turbine
17 buildings, WEC/CB&I had been consistently unable to meet the productivity
18 factors on which their cost and schedule estimates had been based. This was
19 true both for the V.C. Summer Units 2 & 3 Project and the Vogtle Project.

20 **Q. HOW DID SCE&G RESPOND?**

21 A. During the course of the Project, I observed SCE&G management
22 consistently giving feedback to Consortium management on the poor

1 performance as demonstrated by their productivity factors. I was aware that
2 SCE&G's senior executives directly discussed productivity with
3 WEC/CB&I's senior leadership. Project actions were generated that
4 recognized the need to improve productivity. SCE&G also independently
5 calculated performance by performing short-term monitoring of key specific
6 activities and gave this feedback to the Consortium, which included
7 observations of issues causing delay.

8 **Q. WHAT ACTIONS DID SCE&G TAKE TO MOTIVATE WEC/CB&I**
9 **TO IMPROVE LABOR PRODUCTIVITY?**

10 A. It became clear that the problem with productivity at the site was not
11 due solely to learning curve issues or other matters which could be easily
12 corrected. It was clear that the Consortium was not making significant
13 progress in resolving these matters. As Mr. Kochems testifies, for that reason,
14 beginning in 2014, SCE&G took action by disputing those portions of
15 invoices that were believed to be caused either by poor productivity or delay.
16 SCE&G's position was that these additional costs were incurred in violation
17 of the obligation that Westinghouse and CB&I assumed under the EPC
18 Contract to use good industry practices in building the Units.

19 Westinghouse and CB&I rejected this allegation and asserted that the
20 productivity issues were not the result of failure to meet general construction
21 standards but were the result of the complexity of the construction, the new
22 NRC licensing regime, and other factors outside of their direct control.

1 Nevertheless, each month SCE&G computed the amount of each
2 invoice it believed was related to poor productivity or delay and began
3 disputing charges and withholding payments on that basis.

4 **Q. IN 2015, WHAT WERE THE COST FORECASTS FOR**
5 **COMPLETING THE PROJECT COMPARED WITH THE**
6 **ORIGINAL COST FORECAST?**

7 A. In the 2015 Update Proceeding, as Mr. Kochems testifies, SCE&G
8 presented updated cost schedules which increased cost of the Units to \$6.8¹
9 billion or approximately 8% more than the \$6.3 billion which was approved
10 by the Commission in 2009. As the Commission found in Order No. 2015-
11 661 (p. 7).

12 **Q. WHAT WERE THE PROPOSED COMPLETION DATES OF THE**
13 **UNITS IN 2015?**

14 A. In the 2015 Update Proceeding, SCE&G requested an update to the
15 construction schedule for the Units to reflect a new schedule provided by
16 Westinghouse and CB&I. That construction schedule delayed the substantial
17 completion date of Unit 2 by 27 months to June 19, 2019 and Unit 3 by 25
18 months to June 16, 2020.

19 **Q. AFTER THESE COMMERCIAL ISSUES WERE KNOWN, WHAT**
20 **HAPPENED IN 2016 TO CHANGE THE PROJECT?**

¹ All costs are SCE&G's 55% portion of the capital cost of the NND Project unless otherwise stated.

1 A. Shortly after the Commission hearing in the 2015 Update Proceeding
2 concluded, Westinghouse and CB&I approached SCE&G indicating they
3 agreed that the Consortium structure was broken and needed to be scrapped.
4 CB&I wanted to leave the Project and Westinghouse was willing to take sole
5 responsibility for the Project by buying CB&I's nuclear construction
6 business. Westinghouse told us that if the sale went through, Westinghouse
7 would substitute the Fluor Corporation as its construction subcontractor —
8 but as a contractor only, not as a Consortium member. Westinghouse would
9 be solely responsible for the conduct of the Project.

10 **Q. WHAT WAS YOUR UNDERSTANDING CONCERNING**
11 **WESTINGHOUSE'S COMMITMENT TO SUCCESSFULLY**
12 **COMPLETE THE PROJECT?**

13 A. My team and I had worked side by side with key Westinghouse
14 personnel throughout the course of Project. We regularly interacted with our
15 Westinghouse counterparts in both formal and informal settings. Our
16 Westinghouse colleagues candidly shared with us their company's goal of
17 growing to be the global supplier of advanced passive safety nuclear
18 generation technology. On more than one occasion, our Westinghouse
19 colleagues discussed with us the critical importance of successfully
20 completing these Units to their global marketing plans, and specifically how
21 important it was to complete these Units in the highly-regulated U.S. market
22 where the regulatory and safety requirements of construction are as

1 challenging as anywhere in the world. My Westinghouse colleagues
2 understood that the failure to complete the project successfully could hinder
3 Westinghouse's ability to fulfill its long-term goals.

4 At the time, we had every reason to believe that Westinghouse was
5 fully committed to finishing the Project. That was clearly the understanding
6 of the Westinghouse personnel with whom we interacted.

7 **Q. HOW WAS THE DECISION TO END THE CONSORTIUM**
8 **STRUCTURE RECEIVED BY THE NND TEAM?**

9 A. The NND team welcomed the idea of ending the Consortium
10 structure. The divided responsibility for the Project had become a source of
11 increasing friction between the parties and was creating delay and
12 inefficiency. It was increasingly obvious that Westinghouse and CB&I could
13 not agree on how to resolve recurring problems with the Project or who
14 would pay for mitigation efforts. Westinghouse's willingness to take full
15 responsibility for the Project going forward was consistent with what our
16 Westinghouse colleagues had told us about the vital importance to
17 Westinghouse of successfully completing this Project to the success of its
18 global business strategy.

19 **Q. HOW DID YOU FEEL ABOUT FLUOR JOINING THE PROJECT?**

20 A. My team and I also were cautiously optimistic that Fluor Corporation
21 would be taking responsibility for day-to-day operations on the site. Fluor is

1 a corporation with deep South Carolina roots and had successfully completed
2 generation construction projects for SCE&G going back decades.

3 Fluor began work off-site in late 2015 to aid Westinghouse in their
4 transition process. Fluor immediately started working with Westinghouse,
5 SCE&G and Southern Nuclear Company to identify issues that were driving
6 construction inefficiency and poor labor productivity. This was part of the
7 transition process that Westinghouse was managing; they created teams to
8 focus on transitioning the Stone & Webster business from CB&I to
9 Westinghouse. Those review teams looked at these issues across both the
10 Jenkinsville and Vogtle projects and included representatives from SCE&G,
11 Santee Cooper, and the Southern Nuclear Company in addition to
12 Westinghouse and Fluor. SCE&G participated in aspects of the transition
13 process where it was not excluded by Westinghouse due to the fixed-price
14 nature of the 2015 Amendment. Once the Stone & Webster transaction
15 between CB&I and Westinghouse was completed in January 2016, Fluor was
16 allowed to mobilize to the site. There they continued to work with
17 Westinghouse and SCE&G on various Functional Area Assessments. These
18 review teams conducted a deep dive into the problems hindering efficiency
19 and formulated action plans to correct them. Fluor began implementing the
20 results of these reviews as soon as they were available, pending
21 Westinghouse funding.

1 **Q. WHAT OTHER BENEFITS WAS SCE&G ABLE TO NEGOTIATE IN**
2 **EXCHANGE FOR ALLOWING CB&I TO EXIT THE PROJECT?**

3 A. The desire to have CB&I released from the Consortium gave SCE&G
4 and Santee Cooper the opportunity to negotiate the option to fix the price for
5 completion of the remaining scopes of work under the EPC Contract at
6 \$3.345 billion. This fixed price was subject only to limited exceptions.
7 SCE&G and Santee Cooper were also able to renegotiate the liquidated
8 damages Westinghouse would pay for missing completion deadlines and to
9 increase them by fourfold. In addition, the 2015 Amendment resolved the
10 existing disputes between the parties with only limited exceptions and
11 prohibited the parties from filing lawsuits against each other before the
12 Project was completed.

13 **Q. HOW DID THE 2015 AMENDMENT CHANGE THE RISK**
14 **FACTORS THAT THE COMPANY HAD IDENTIFIED IN THE 2015**
15 **UPDATE PROCEEDING?**

16 A. The Fixed-Price Option made Westinghouse primarily responsible for
17 increased costs due to labor productivity and dramatically reduced SCE&G's
18 exposure to price risks. The liquidated damages provisions shifted a great
19 deal of schedule risk onto Westinghouse and made the important changes to
20 the Project in the following areas.

- 21 1. Effectively enforcing the terms of the EPC Contract was greatly
22 simplified since the Consortium was no longer two individual

1 companies, but solely Westinghouse, and the commercial terms of
2 the EPC Contract were greatly streamlined by going to a milestone
3 based payment schedule.

4 2. The scheduling and productivity challenges related to the
5 fabrication of modules and submodules and procurement of major
6 commodities were substantially mitigated by the elimination of
7 CB&I and the centralization of authority in Westinghouse. These
8 schedule and productivity challenges had been increasing costs
9 and delaying the construction schedule. Centralizing
10 responsibility and risk of non-performance in Westinghouse
11 helped speed-up resolution of commercial challenges with
12 vendors. More significant liquidated damages for schedule delays
13 were important to motivate Westinghouse to procure these items
14 in accordance with the overall schedule.

15 3. By eliminating CB&I and having Westinghouse contract directly
16 with Fluor for labor, it was understood that Westinghouse could
17 exert more direct control over productivity by providing penalties
18 and incentives for improvements by Fluor. It could also motivate
19 Westinghouse to reduce obstacles and barriers to improve labor
20 productivity that were within Westinghouse's direct control, such
21 as untimely changes by Westinghouse engineers in design
22 documents and the procurement practices by Westinghouse and

1 CB&I which had been delaying the availability of construction
2 material required by the on-site contractor.

- 3 4. Risks associated with startup and testing of the Units was reduced
4 by transferring this scope of work from costs based Time &
5 Materials pricing and including it within the fixed-price scope. In
6 addition, the increased liquidated damages would provide an
7 incentive for Westinghouse to complete the Units in a timely way
8 that supported the new schedule.

9 By accepting the primary financial responsibility for labor
10 productivity, and agreeing to terms which limited future disputes,
11 Westinghouse reset the relationship between our companies and allowed us
12 to move forward without the rancor or tension that had been growing in 2014
13 and 2015. All told, the 2015 Amendment fundamentally reduced the risk
14 factors identified above.

15 **Q. AFTER THE 2015 AMENDMENT TO THE EPC CONTRACT WAS**
16 **EXECUTED, WERE YOU CONCERNED THAT THE UNITS COULD**
17 **NOT BE SUCCESSFULLY COMPLETED?**

18 A. No. After the 2015 Amendment to the EPC Contract was executed,
19 the Company believed, as did I, that through the elimination of the
20 Consortium structure, the addition of the Fixed-Price Option, the amended
21 EPC Contract terms and Fluor's energy and expertise, the problems with
22 construction productivity and other issues could be overcome. We believed

1 that Westinghouse would have to make several significant and fundamental
2 changes to their processes, procedures, and the site culture to be successful.
3 We believed that Fluor could help Westinghouse accomplish this, especially
4 if Westinghouse negotiated a contract with Fluor that provided the right kind
5 of incentives and penalties. Nevertheless, we did believe that the Project
6 could be completed if Westinghouse would put the appropriate focus on
7 planning, improving execution, and mitigating risks.

8 **Q. AFTER THE 2015 AMENDMENT TO THE EPC CONTRACT WAS**
9 **EXECUTED, WHAT WAS YOUR UNDERSTANDING**
10 **CONCERNING WESTINGHOUSE'S COMMITMENT TO**
11 **SUCCESSFULLY COMPLETING THE PROJECT?**

12 A. After the 2015 Amendment to the EPC Contract was executed, the
13 Westinghouse personnel we interacted with continued to give us every
14 indication that Westinghouse was committed to completing the Project and
15 that doing so was of primary importance to Westinghouse's global business
16 strategy. The risks and obligations that Westinghouse agreed to accept under
17 the 2015 Amendments supported our understanding that Westinghouse was
18 willing to commit the financial and managerial resources to complete the
19 Project successfully and that doing so was of critical importance to
20 Westinghouse's global marketing strategy.

1 **Q. BEFORE THE FOURTH QUARTER OF 2016, DID YOU HAVE ANY**
2 **INDICATION THAT THERE WERE UNDISCLOSED**
3 **ACCOUNTING IRREGULARITIES AT WESTINGHOUSE?**

4 A. No. Before the fourth quarter of 2016, my team and I had no indication
5 of any accounting issues at Westinghouse. In the latter half of 2016, I
6 understood that Westinghouse was having delays in completing their
7 Estimate To Complete (“ETC”) of EPC costs and schedule for the Project,
8 but I had no idea there were going to be negative accounting ramifications at
9 Westinghouse or Toshiba.

10 **Q. BEFORE DECEMBER OF 2016, DID YOU HAVE ANY INDICATION**
11 **THAT WESTINGHOUSE MIGHT BE CONSIDERING**
12 **BANKRUPTCY?**

13 A. No. Before December 2016, my team and I had no indication that
14 Westinghouse might be considering bankruptcy.

15 **Q. WHAT WAS THE STATUS OF THE PROJECT IN MARCH 2017**
16 **WHEN WESTINGHOUSE DECLARED BANKRUPTCY?**

17 A. In the months leading up to the bankruptcy filing on March 29, 2017,
18 the Project in total was 64.1% complete. (*See* Quarterly Report at 8 (March
19 31, 2017) (“March Rpt.”); Quarterly Report at 7 (Dec. 31, 2016) (“Dec.
20 Rpt.”).) All main structural modules for Unit 2 had been fabricated and
21 installed within the Unit. (Quarterly Report at 7-8 (Sept. 30, 2016) (“Sept.
22 Rpt.”); Dec. Rpt. at 10.) All four cooling towers for the Project were

1 structurally complete. (Sept. Rpt. at 9); Dec. Rpt. at 9.) The switchyard,
2 circulating water system and offsite water system were also structurally
3 complete. (Quarterly Report at 11 (June 30, 2016) (“June Rpt.”); Sept. Rpt.
4 at 9.) The Unit 2 Pump structure for the Cooling Towers was structurally
5 complete, and the Unit 3 Pump structure was 95% structurally complete.
6 (March Rpt. at 10.)

7 The Unit 2 reactor vessel had been set in place. (Sept. Rpt. at 7-8.)
8 Welding and assembly of the Unit 2 Containment Vessel Top Head
9 continued and was approximately 95% complete. (March Rpt. at 9.) The
10 Unit 2 Hot and Cold Leg Reactor Coolant System piping was also in place
11 and being welded to the reactor vessel. (March Rpt. at 8-9.) The third of the
12 three Unit 2 containment vessel rings had been fabricated and set in place
13 and all major welding to fabricate the Unit 2 Top Head and the containment
14 for Unit 3 had been completed. (June Rpt. at 10; March Rpt. at 8-9.)

15 The turbine building for Unit 2 was approaching structural
16 completion, and components of the turbine generator were being installed.
17 (March Rpt. at 9.) Work on the Unit 3 Nuclear Island, Unit 3 Containment
18 Vessel, Unit 3 Auxiliary and Annex Building, Unit 3 Turbine Building, and
19 Unit 3 Shield Building were underway. (Dec. Rpt. at 8-9; Sept. Rpt. at 8-9;
20 March Rpt. at 9-10.)

21 All submodules needed to complete the major structural modules for
22 Unit 3 had been received on-site. (March Rpt. at 11.) Structural submodule

1 fabrication had been a critical path item previously and the focus area for
2 SCE&G's oversight of the Project but was not a critical path area or focus
3 area any longer.

4 Fabrication and delivery of shield building panels was proceeding
5 well at that time: 148 of the 167 Shield Building panels for the Unit 2 Shield
6 Building had been received on site, and 81 of the Unit 3 Shield Building
7 panels were on site. (March Rpt. at 11.)

8 Over 80% of the major equipment for the Units had been received on-
9 site, including the steam generators. (March Rpt. at 12.) The Air Inlet and
10 Tension Ring mockups had been successfully fabricated and tested at NNI,
11 and fabrication was proceeding as expected. (Dec. Rpt. at 10.) Final assembly
12 testing for all Unit 2 and Unit 3 Reactor Coolant Pump components was in
13 process. (Sept. Rpt. at 11.) The Unit 2 Passive Residual Heat Removal Heat
14 Exchanger was received on site, and the similar component for Unit 3 was
15 being prepared for shipment after having been upgraded with additional
16 baffles to extend its useful life. (March Rpt. at 12.)

17 In summary, in March 2017, while there were important issues yet to
18 be resolved, the Project was moving forward and significant progress was
19 being made.

20 **Q. AT THE TIME OF THE BANKRUPTCY ANNOUNCEMENT, WAS**
21 **THERE ANY DESIGN, CONSTRUCTION OR TECHNICAL**

1 **REASON THAT THE UNITS COULD NOT BE SUCCESSFULLY**
2 **COMPLETED?**

3 A. I am not aware of any design, construction or technical reason why
4 the Units could not have been completed with commitment and perseverance
5 by all parties. I would note that the AP1000 units being constructed in China
6 are nearing completion and one unit has been successfully placed in service.
7 Had that bankruptcy not occurred, Westinghouse would still have the
8 primary risk of completing the Project and we would be working toward
9 doing so for the benefit of our customers.

10 **III. THE WESTINGHOUSE BANKRUPTCY**

11 **Q. WHAT WAS YOUR TEAM'S ASSIGNMENT AFTER THE**
12 **WESTINGHOUSE BANKRUPTCY?**

13 A. In addition to our other duties concerning the ongoing construction
14 work, immediately after the Westinghouse bankruptcy declaration, my team
15 was tasked with receiving and evaluating the Westinghouse ETC, which
16 included information from Fluor. Westinghouse was cooperative in this
17 effort and provided us all the data that they had concerning costs and
18 schedules and concerning the commercial arrangements they had with their
19 subcontractors and vendors. This information had previously been
20 considered proprietary commercial data by Westinghouse, but that changed
21 with the bankruptcy filing.

1 After evaluating the Westinghouse ETC, we determined it to be
2 insufficient for use by the Owners going forward to properly manage the
3 Project. We were then tasked with independently compiling and verifying an
4 Owner's ETC, to include a cost estimate and a construction schedule for
5 completing the Units as an owner-directed project. We worked closely with
6 representatives from Santee Cooper and from Fluor and with independent
7 scheduling and cost estimating experts who were hired for this task. We also
8 coordinated our efforts with the Southern Nuclear Company, who had made
9 the same determination of Westinghouse's ETC and prepared a Vogtle
10 Owner's ETC. At that time, the Vogtle Project was at a corresponding point
11 of construction progress, had a comparable project organization, and was
12 experiencing similar issues as V.C. Summer Units 2 & 3.

13 **Q. WAS SCE&G'S DECISION TO CONTINUE CONSTRUCTION OF**
14 **THE PROJECT UNDER AN INTERIM ASSESSMENT**
15 **AGREEMENT REASONABLE AND PRUDENT?**

16 A. Yes. The decision to continue construction while the evaluation of
17 cost, schedules and options was underway was a reasonable and prudent²
18 choice by SCE&G and Santee Cooper senior executives. As Mr. Addison
19 testifies, the initial indications from Westinghouse were that the costs for

² When I use the word prudent, I use the common dictionary definition as I understood it at the time the Project was ongoing, not any definition subsequently given via statute.

1 SCE&G and Santee Cooper to complete the Units as owner-directed projects
2 would be manageable, especially considering that Toshiba was standing by
3 its corporate guarantee for the Project. The funds that SCE&G and Santee
4 Cooper anticipated receiving from that corporate guarantee would have been
5 sufficient to cover the additional construction costs as they were initially
6 communicated by Westinghouse. However, as we dug into those costs, it
7 became clear that a more reasonable and prudent costs assessment would
8 involve substantially more expense than had been communicated initially by
9 Westinghouse.

10 **Q. WHY DID YOU CONTINUE TO WORK ON THE PROJECT**
11 **PENDING THE OUTCOME OF THE ANALYSIS?**

12 A. It would have been technically possible to suspend work on the
13 Project while options were being evaluated. However, doing so would have
14 been both expensive and time consuming. The cost of demobilizing and then
15 re-mobilizing the construction team that was on site would have been
16 significant. It would also have been expensive and could have a significant
17 adverse impact to the construction schedule to ask off-site fabricators to stop
18 work and then restart later.

19 **Q. ONCE YOU PRESENTED YOUR INITIAL JULY 2017**
20 **ASSESSMENT OF A REASONABLE COST AND CONSTRUCTION**
21 **SCHEDULE FOR COMPLETING THE PROJECT, WOULD IT**
22 **HAVE BEEN PRUDENT TO ABANDON THE PROJECT THEN?**

1 A. No. Even after we presented our initial analysis of costs and schedule
2 to the executives of SCANA and Santee Cooper, there were still viable
3 options to explore. As Dr. Lynch testifies, the economic analysis showed
4 that with Santee Cooper as a co-owner, it would still be in customers'
5 economic interest to complete Unit 2 and Unit 3; completing only Unit 2 with
6 Santee Cooper as a co-owner was also shown to be reasonable. As Mr.
7 Addison testifies, there were important construction, financial, regulatory,
8 and other risks that had not yet been fully assessed.

9 **Q. WHAT WAS YOUR TEAM'S ROLE IN THESE MATTERS AFTER**
10 **COMPLETING THE REVIEW OF COSTS AND CONSTRUCTION**
11 **SCHEDULES?**

12 A. At the time the abandonment decision was made, my team was
13 actively involved in oversight of the day-to-day activities of the Project,
14 including setting up an Owner's Project control system. Also, I was part of
15 the NND transition planning process, which included scoping and
16 negotiating commercial agreements with Westinghouse, Fluor and other
17 vendors and subcontractors to support the continuation of the Project in some
18 form as an Owner-directed Project.

19 **IV. ABANDONMENT ACTIVITIES**

20 **Q. WHAT DOES IT MEAN FROM A CONSTRUCTION STANDPOINT**
21 **TO ABANDON THE SITE?**

1 A. When the abandonment decision was made, we were instructed to put
2 the site in a safe and stable condition, remove and dispose of hazardous
3 substances, supervise the removal of contractor's rental property, but
4 otherwise take no action inconsistent with abandonment of the Project as of
5 year-end 2017.

6 Through December 29, 2017, preventative maintenance was being
7 performed on some uninstalled equipment stored at the Site or stored in
8 warehouses. Installed equipment has remained in the same condition as it
9 was on the date it was decided to abandon construction. The majority of the
10 major equipment, for example a steam generator, is not subject to
11 degradation due to exposure to the elements. This equipment was intended
12 to be installed in an un-sheltered construction site that would remain open to
13 the elements through a multi-year construction process. In addition, the
14 buildings that comprise an operating nuclear power plant, such as the reactor
15 building, containment building, and turbine building, are hot, humid
16 environments where the equipment must be able to withstand changes in
17 temperature, condensation, humidity and corrosion. In fact, surface corrosion
18 is fully expected for exposed metal surfaces in an operating nuclear plant
19 because it forms a passive oxide layer which protects the underlying layers
20 from additional corrosion. Even if the Units were to be completed, no further
21 action would be taken regarding this passive oxide layer that has built up on
22 existing components. It is entirely normal.

1 **Q. WERE ANY MATERIALS SOLD TO ANY SALVAGE VENDORS?**

2 A. No. Consistent with abandonment, SCE&G did not sell any materials
3 other than the fly ash contained in a rental containers at the Westinghouse
4 Batch Plant so that the rental container could be returned to the vendor.

5 **Q. ARE THERE ANY FURTHER PLANS FOR MATERIALS ON SITE?**

6 A. A small amount of materials, such as civil commodities like rebar,
7 couplers, a major valve and two reactor coolant pumps are being sold to
8 Southern Nuclear Company pursuant to a December 31, 2017 Letter of
9 Intent. Due to the abandonment decision, SCE&G has no further plans for
10 the materials on site consistent with abandonment. SCE&G has offered to
11 transfer ownership of materials to Santee Cooper, which Santee Cooper is
12 considering.

13 Santee Cooper has contracted with Fluor to maintain a select list of
14 high value equipment at least temporarily.

15 **Q. HOW ARE ITEMS STORED IN OFF-SITE STORAGE BEING**
16 **HANDLED?**

17 A. SCE&G rents two offsite warehouses where materials are currently
18 being stored. SCE&G pays 55% of the rent associated with these warehouses,
19 and Santee Cooper pays 45%. The lease for one warehouse expires on
20 August 21, 2018. The lease for the other expires on November 30, 2018. We
21 offered to let Santee Cooper take over these leases if it wishes, but Santee

1 Cooper declined to assume the leases in a May 4, 2018 letter to SCE&G.
2 SCE&G will remove these materials to the site and terminate the leases.

3 **Q. IS THE REAL PROPERTY CONSIDERED ABANDONED?**

4 A. No, the real property that the Units sit on has not been abandoned.
5 SCE&G owns the real property in conjunction with Santee Cooper.

6 **Q. HOW MANY PERMITS DOES SCE&G HAVE OUTSTANDING**
7 **THAT NEED TO BE CLOSED OUT?**

8 A. SCE&G currently has fifteen construction/storm water permits that
9 are in the process of being terminated, as well as an NPDES discharge permit,
10 an air quality batch plant permit, Norfolk Southern access permit, U.S. Army
11 Corp of Engineers 404 permit, FERC permit, Federal Aviation
12 Administration (FAA) permits, waste water and potable water piping
13 permits, and termination of the Spill Prevention, Control and
14 Countermeasures Plan. SCE&G is working with the appropriate regulatory
15 agency, or third party in the case of Norfolk Southern, to ensure permit
16 compliance and closure.

17 **Q. WHAT IS THE STATUS OF THE COMBINED OPERATING**
18 **LICENSES FOR THE TWO UNITS THAT WERE ISSUED BY THE**
19 **NRC UNDER 10 C.F.R. PART 52?**

20 A. SCE&G asked the NRC to terminate these Combined Operating
21 Licenses on December 27, 2017. In January 2018, Santee Cooper asked the
22 NRC to not take any action for 180 days. We did not object to this request.

1 Santee Cooper management has informed the NRC that they are committed
2 to recommending to their Board that the COLs be terminated..

3 **V. ASSETS BEING PLACED IN SERVICE**

4 **Q. ARE ANY CONSTRUCTION PROJECTS, APART FROM**
5 **TRANSMISSION PROJECTS, BEING PLACED IN SERVICE AND**
6 **NOT BEING ABANDONED?**

7 A. SCE&G will place in service a number of construction projects that
8 were undertaken as part of the NND Project but will be used to support
9 generation activities on the V.C. Summer site. These aspects of the Project
10 have not been abandoned and are being placed in service.

11 **Q. WHAT ARE THESE ASSETS AND WHAT IS THEIR USE?**

12 A. **The V.C. Summer Switchyard No. 2:** This portion of the project,
13 which was constructed as part of the EPC Contract, is part of the SCE&G
14 system and will not be abandoned. As Mr. Richards testifies, the new
15 switchyard expands SCE&G's ability to terminate or interconnect lines at the
16 V.C. Summer site, including lines from other transmission systems.

17 **Off-Site Water System:** The Off-Site Water System (OWS)
18 provides potable water that is needed for Unit 1. The current Unit 1 water
19 treatment system was built at the time of that unit's initial construction in the
20 1970's. It has aged significantly. It is more economical to replace the current
21 Unit 1 system with a new system rather than to continue to repair and replace

1 components of the existing system through the end of Unit 1's useful life and
2 eventual decommissioning.

3 **Nuclear Operations Building (NOB):** The former Unit 1 NOB was
4 located near the current location of the Unit 1 Interim Spent Fuel Storage
5 Installation (ISFSI). Nuclear security regulations required the relocation of
6 the Unit 1 NOB to allow for the construction of the ISFSI. Also, the Unit 1
7 NOB was built at the time of initial construction of Unit 1 in the 1970's and
8 had aged significantly. It was more economical to replace the current Unit 1
9 NOB than to continue to maintain the current facility through the end of Unit
10 1's useful life and eventual decommissioning.

11 **Nuclear Learning Center Annex:** The Nuclear Learning Center
12 Annex is being repurposed to support Unit 1 in processing contracting
13 employees, and in housing laboratories and staff that are now located in the
14 former New Nuclear Deployment Building, which is being retired.

15 **CHAMPS Work Management System:** The software system
16 formerly used by Unit 1 for work management had aged significantly and
17 could no longer be supported. Therefore, it was decided to implement a
18 multi-unit upgrade, which continues to improve the efficiency of operations
19 at Unit 1 and could not be abandoned.

20 **Emergency Response Building:** The Emergency Response Building
21 and associated equipment was constructed to meet regulatory and industry
22 requirements, primarily due to new post-Fukushima regulations required of

1 expanded emergency response capabilities, and to reduce insurance costs.
2 The upgraded facility will continue to support Unit 1 requirements and could
3 therefore not be abandoned.

4 **Security Training Facility:** This facility was constructed to meet
5 regulatory and industry physical security standards, and to replace the
6 existing facility which was built in a recognized flood plain and within the
7 boundary of the Parr Hydro FERC Project. FERC did not approve the long-
8 term use of this location and the new security training facility will continue
9 to support Unit 1 requirements and could therefore not be abandoned.

10 **Software Licenses:** Various software systems formerly used by Unit
11 1 have aged significantly or otherwise needed to be upgraded or replaced.
12 These additional software licenses will continue to support Unit 1
13 requirements and could therefore not be abandoned.

14 **Wastewater Treatment Facility:** A new wastewater treatment
15 facility was needed regardless of Units 2 or 3. The current Unit 1 wastewater
16 treatment system was built at the time of initial construction and has aged
17 significantly. It was more economical to replace the current Unit 1 system
18 with a new system rather than to continue to repair and replace components
19 of the existing system through the end of Unit 1's useful life and eventual
20 decommissioning.

21 **Railroad Spur:** The railroad spur serving Unit 1 needed significant
22 upgrades and repairs to support the delivery of large replacement

1 components for Unit 1 and for Fairfield Pumped Storage facility. These
2 upgrades were completed as part of the realignment of the rail spur on to the
3 tabletop leveled for the construction of Units 2 and 3. The cost of grading for
4 the relocated rail bed was born entirely by the NND project. Unit 1 will bear
5 only the cost of the new rail line itself (rails, ballast, ties, etc.) that serves it.
6 Unit 1 would have been required to rebuild the rail line even if Units 2 and 3
7 had never been proposed

8 **IT Facilities:** These facilities were constructed for Units 2 & 3 but
9 are now an integral part of the SCANA IT network and serve multiple
10 SCANA facilities, including Unit 1 and ancillary facilities such as OWS.
11 They represent a valuable upgrade to the IT facilities that had previously
12 served the site.

13 **Q. HOW ARE PROJECT RECORDS BEING HANDLED?**

14 A. Other than certain records, like personnel records belonging to Human
15 Resources, SCE&G is holding all records on site. Records belonging to
16 Westinghouse have been boxed up, but they have not left the site and will
17 not do so until SCE&G receives Commission authorization to do so, along
18 with authorization from other interested parties.

19 **VI. CONCLUSION**

20 **Q. ARE THE ACTIONS SCE&G HAS BEEN TAKING REGARDING**
21 **ABANDONMENT ACTIVITIES REASONABLE AND PRUDENT?**

1 A. Yes they are. As Manager for Nuclear Plant Demobilization, I am
2 involved on an on-going basis with all major aspects of the abandonment.
3 The abandonment activities are the result of a number of decisions and
4 events, including Consortium project management, Westinghouse
5 bankruptcy, the loss of the risk mitigation provided by the fixed-price EPC
6 Contract, subsequent capital cost evaluation, evaluation of economic models
7 for SCE&G's power generation, and the decision by Santee Cooper to
8 suspend construction of the Project due to lack of need for power generation.

9 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

10 A. Yes, it does.